Name:

at1118paper: Complete the Square (v402)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 32x = -240$$

Add $\left(\frac{-32}{2}\right)^2$, which equals 256, to both sides of the equation.

$$x^2 - 32x + 256 = 16$$

Factor the left side.

$$(x - 16)^2 = 16$$

Undo the squaring. We need to consider both $\pm\sqrt{16}$.

$$x - 16 = -4 \quad \text{or} \quad x - 16 = 4$$
$$x = 12 \quad \text{or} \quad x = 20$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 + 18x = -56$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 - 52x = -667$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 - 12x \;=\; -35$$

Question 4

By completing the square, find both solutions to the given equation:

$$x^2 + 40x \;=\; -375$$

Question 5

By completing the square, find both solutions to the given equation:

$$x^2 - 42x \;=\; 2160$$

Question 6

By completing the square, find both solutions to the given equation:

$$x^2 + 24x \;=\; -119$$